## REMARKS

Claim 1 has been amended and claims 3, 4, 9, 12, 13 and 22-39 have been cancelled without prejudice. As such, Claims 1, 2, 5-8 and 16-18 are currently pending.

### A. Amendments:

Claim 1 has been amended to now recite that it is directed to a method for separating cytosolic and parenchyma components from vegetable material by fiberizing the vegetable material by means of a pulp or paper mill refiner. Claim 1 has also been amended to clarify that the method includes fiberizing the vegetable material to substantially open all cell walls and to dissociate virtually completely all cytosolic and parenchyma materials from cell walls and fibrous materials. Support for amended Claim 1 can be found throughout the specification and more specifically in previously amended claim 4 (now cancelled) and at page 17, lines 1-10. No new matter had been added.

### B. The Invention

The presently claimed method relates to the separation and recovery of components from plants. More in particular, the invention relates to the recoverability of desired products, for example the recoverability of proteins from the cytosol. The traditional methods of fractionation (for example hammer mill followed by squeezing or grinding followed by pressing) have as a consequence that upon squeezing the pulp, only a part of the cell content constituents end up in the juice stream, with the remainder left behind in the press cake. Accordingly, the press cake still contains, in addition to the greater part of the cell walls, a part of the cell content constituents and, by virtue of that, is used as a fodder (see page 10, lines 10-15).

The traditional methods only result in a partial separation of cytosolic/parenchyma components from cell wells/fibrous components and hence the fraction of cell walls/fibrous components still contains a lot of cytosolic/parenchyma components. This is clearly shown in the example with a hammer mill + screw press and the example with grinding + pressing in

the present patent application (see pages 29-30, Tables 4 and 5). Even after 8 passes through a hammer mill the protein recoverability is only 43% and the protein recoverability of grinding + pressing varies between 11-52%. For recovering high-grade components from genetically modified and unmodified plants, such as, for instance from leaf and/or stem parts, roots or tubers, there is a need for better methods which can access the plant cell with a higher efficiency than do the existing methods, which can make the cytosol fraction more available for recovery, and which affords better marketing possibilities for fiber-containing residual material. The object of the present invention is to provide for this need. Thus, in contrast to the known methods, which use hammer mills on grinders, the present invention results in a protein recovery in excess of 80%, usually in excess of 90%. See examples on pages 29-33, tables 4, 5 and 6. A review of those tables clearly shows that the claimed method results in a large improvement with respect to protein recoverability (i.e. soft tissue/juice stream/cytosolic and parenchyma components), which is directly related to the amount of separation (of cytosolic and parenchyma components from cell walls and fibrous components) that has taken place.

## C. Responses to Rejections:

### 35 U.S.C. 102(b) Rejections

On pages 2-3 of the Office Action, Examiner Tate has rejected Claims 1-5, 8, and 16 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,332,125 to Holdren (hereinafter "Holdren").

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ 2d 1051, 1053, (Fed. Cir. 1987). The identical invention must be shown in as complete detail as contained in the claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ 2d 1913, 1920 (Fed. Cir. 1989).

Holdren involves a method of extracting fluid from forage crops in order to expedite the drying and storage of said forage for later use as animal feed, while preserving a substantial portion of its nutritional value. Holdren does not disclose fiberizing vegetable material by means of a pulp or paper mill refiner.

Instead, the term fiberization as used by Holdren, refers to ripping or subdividing at least about 75% of the fresh cut forage into fibers having a length of 0.1 to 5 inches. (See col. 4, lines 63-65). This is insufficient to substantially open all cell walls and dissociate virtually completely the juice and fiber components of the plant material. Significantly, following fiberization, the fiber component in Holdren still retains a moisture content of about 45 to 75% by weight. (See col. 5, lines 52-55). Thus, the basic premise of Holdren is simply to extract only sufficient fluid from the plants so as to facilitate the drying process.

Contrary to Holdren, the presently claimed method includes steps to maximize the recovery of nutrient rich cytosolic contents by fiberizing the vegetable material using a pulp or paper mill refiner. After fiberizing the vegetable material, it is separated into a fiber fraction, which contains virtually completely all fibrous material, and a juice fraction, which contains virtually completely all cytosolic material.

Thus, as Holdren does not disclose each and every element as set forth in the present claims and does not show the identical invention in as complete detail as claimed, it is respectfully submitted that Holdren cannot anticipate the present claims. *See Verdegaal*, 814 F.2d at 631 and *Richardson*, 868 F.2d at 1236.

Accordingly, it is respectfully requested that the rejections of Claims 1-5, 8 and 16 as being anticipated by Holdren be withdrawn.

On pages 3-4 of the Office Action, Examiner Tate rejected Claims 1-5, 7, 8, 16, and 17 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,948,677 to Huster et al. (hereinafter "Huster et al.") or U.K. Patent Application G.B. Patent No. 2,103,635 to Woodward (hereinafter "Woodward et al.").

Huster et al. is directed to a process for the recovery of starch from the cellular tissue of root crops. Similarly, Woodward is directed to a process for recovering starch from Cassava and like roots. Neither Huster et al. nor Woodward disclose fiberizing vegetable material by means of a pulp or paper mill refiner.

Instead, Huster et al. merely disclose generally grinding the root crops, followed by homogenizing and centrifugal separation of the juice and fiber fractions. See Col. 3, line 54 to Col . 5, line 5. Similarly, Woodward merely discloses pulverizing the roots of the starch-bearing plants using a standard shredder (or "ripple" mill) for plants, pressing the solids, separating the starch rich juice from the fibrous material and separating the starch from the juice fraction. See page 2, lines 21- 82.

Moreover, neither Huster et al. nor Woodward disclose dissociating virtually completely the juice and fiber components, as claimed. Huster et al. actually teach away from this invention. In Huster et al., the starch is actually found in the fiber fraction after the initial pressing. Therefore, additional steps must be taken to release the starch from the fiber fraction while discarding the liquid fraction. In the traditional method used in Huster et al., large amounts of high grade component remain behind in the pressed material. In contrast, the presently claimed invention seeks to remove all possible nutrients (the entire cytosolic content of each plant cell) from the fiber fraction during the initial fiberization step, so that essentially all that remains is the cell wall of each cell.

Similarly, Woodward teaches away from the present invention, because Woodward leaves a substantial amount of nutrients, including the starch that it seeks to recover, in the fibrous fraction after the initial separation of the fiber fraction from the juice stream.

Thus, as neither Huster et al. nor Woodward disclose each and every element as set forth in the present claims and do not show the identical invention in as complete detail as claimed, it is respectfully submitted that Huster et al. or Woodward cannot anticipate the present claims. *See Verdegaal*, 814 F.2d at 631 and *Richardson*, 868 F.2d at 1236.

Therefore, it is respectfully requested that the rejections of Claims 1-5, 7, 8, 16 and 17 as being anticipated by Huster et al or Woodward, be withdrawn.

On page 4 of the Office Action, Examiner Tate rejected Claims 1-5, 7, 8, and 16 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,536,288 to Hultsch (hereinafter "Hultsch"), U.S. Patent No. 4,203,845 to Brouwer (hereinafter "Brouwer"), or Sugar Ind. Res. Inst. (SU 424881 - DWPI ) (hereinafter "Sugar Ind. Abstract").

Hultsch merely teaches a pocket centrifuge and a method of operating same for the continuous separation of a filtrant into a solid and a filtrate. Hultsch does not disclose the claimed method, which includes fiberizing vegetable material by means of a pulp or paper mill refiner. Furthermore, as with Hultsch, Brouwer is only directed to an improved filter press and does not disclose the fiberization step of the present invention. Similarly, the Sugar Ind. Abstract is only directed to equipment and a method for extracting juice from crushed sugar beets, and does not disclose the fiberizing step of the present invention.

Thus, as none of these references disclose each and every element as set forth in the present claims and do not show the identical invention in as complete detail as claimed, it is respectfully submitted that Hultsch, Brouwer or the Sugar Ind. Abstract cannot anticipate the present claims. *See Verdegaal*, 814 F.2d at 631 and *Richardson*, 868 F.2d at 1236.

Accordingly, it is respectfully requested that the rejections of Claims 1-5, 7, 8 and 16 as being anticipated by Hultsch, Brouwer or Sugar Ind. Abstract be withdrawn.

**Rejections Under 35 U.S.C. § 103(a)**

On pages 5-6 of the Office Action, Examiner Tate rejected Claims 1-6, 8, 16-18 under 35 U.S.C. § 103(a) as being unpatentable over Holdren, in view of WO 9,713,402-DWPI Abstract by Folkerts et al. (hereinafter "Folkerts et al.").

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference.

Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all claim limitations. See MPEP § 2142.

The teaching or suggestion to make the claimed combination (or modification) and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

It appears that Folkerts et al. was to relied upon to show that genetically modified vegetables are known in the art. However, there is no teaching or suggestion (in either Holdren or Folkerts et al.) of the claimed method, which includes fiberizing the vegetable material by means of a pulp or paper mill refiner. Thus, it is respectfully submitted that these references do not teach or suggest all of the claim limitations and cannot render this invention obvious.

As such, it is respectfully requested that the rejections of Claims 1-6, 8 and 16-18 as being obvious over Holdren, in view of Folkerts et al. be withdrawn.

On pages 6-7 of the Office Action, Examiner Tate rejected Claims 1-8 and 16-18 under 35 U.S.C. §103(a) as being unpatentable over Huster et al., Woodward, Hultsch, Brouwer, and/or Sugar Ind. Abstract, in view of Folkerts et al. and/or the recognized state of the art.

As discussed more fully above, it is respectfully submitted that none of the cited references (i.e., Huster et al., Woodward, Hultsch, Brouwer, and Sugar Ind. Abstract) teach or suggest the claimed method, which includes fiberizing vegetable material by means of a pulp or paper mill refiner. Moreover, none of the references teach or suggest dissociating virtually completely the juice and fiber components. In fact, each of these references actually teach away from this invention, as already discussed above. Thus, it is respectfully submitted that Folkerts et al., when combined with these references would not render this invention obvious so as to be unpatentable under 35 U.S.C. §103(a).

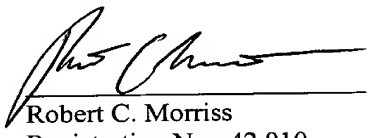
Thus, it is respectfully requested that the obviousness rejection of Claims 1-8 and 16-18 based on Huster et al., Woodward, Hultsch, Brouwer and Sugar Ind. Abstract, in view of

Folkerts et al., be withdrawn.

## CONCLUSION

Accordingly, Applicants respectfully submit that the application as amended, including Claims 1, 2, 5-8 and 16-18, is now in proper form for allowance, which action is earnestly solicited. If the Examiner has any questions relating to this Amendment or to this application in general, it is respectfully requested that the Examiner contact the Applicants' undersigned attorney at the telephone number provided below.

Respectfully submitted,



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